Maryland School Assessment

Science

2007 Public Release

Grade 5

Acknowledgements:

Amusement Park Physics: Free Fall

"Free Fall" from *Amusement Park Physics* at **www.learner.org,** Annenberg Media, ©1997.

Greenhouse Effect

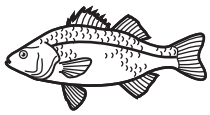
"The Greenhouse Effect." Courtesy: United States Environmental Protection Agency.

Session 1

1 **Fossils are the evidence of organisms that lived long ago.**

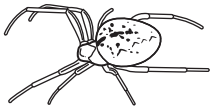
Which of these animals would most likely form a fossil?

○ **A**



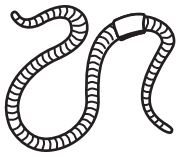
Fish

○ **B**



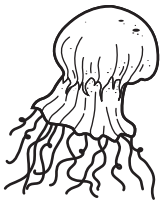
Spider

○ **C**



Earthworm

○ **D**



Sea Nettle

2 **A student mixed 25 grams of salt into 1,000 grams of water.**

What is the mass of the saltwater mixture?

○ **A** 975 grams

○ **B** 1,000 grams

○ **C** 1,025 grams

○ **D** 2,500 grams

3 **A teacher told four students to each measure the mass of a closed container of water. The students took turns measuring the mass. Their data are shown in the table below.**

MASS OF CONTAINER

Student	Closed Container of Water (grams)
1	100
2	99
3	98
4	102

Which statement best explains why there are four different measurements?

- ○ **A** The balance was new.
- ○ **B** Each measurement was done at a different time.
- ○ **C** Each student used a different process to find mass.
- ○ **D** Movement caused the container to lose or gain mass.

4 **Natural processes shape the surface of Earth.**

Most canyons are formed by

- ○ **A** ice
- ○ **B** plants
- ○ **C** steady winds
- ○ **D** moving water

Directions

Use the passage below to answer Numbers 5 through 7.

Free Fall

Galileo first introduced the concept of free fall. His classic experiments led to the finding that all objects free fall at the same rate, regardless of their mass. According to legend, Galileo dropped balls of different mass from the Leaning Tower of Pisa to help support his ideas.

A freely falling body is an object that is moving under the influence of gravity only. These objects have a downward acceleration toward the center of the earth. Newton later took Galileo's ideas about mechanics and formalized them into his laws of motion.

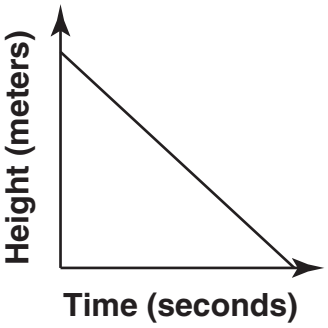
Free-fall rides are really made up of three distinct parts: the ride to the top, the momentary suspension, and the downward plunge. In the first part of the ride, force is applied to the car to lift it to the top of the free-fall tower. The amount of force that must be applied depends on the mass of the car and its passengers. The force is applied by motors, and there is a built-in safety allowance for variations in the mass of the riders.

After a brief period in which the riders are suspended in the air, the car suddenly drops and begins to accelerate toward the ground under the influence of the earth's gravity. The plunge seems dramatic. Just as Galileo and Newton explain in their theories of free fall, the least massive and most massive riders fall to the earth with the same rate of acceleration. If the riders were allowed to hit the earth at that speed, coming to a sudden stop at the end of the ride, there would certainly be serious injuries. Ride designers account for this by building an exit track. The car is attached to this track, which gradually curves toward the ground. A stretch of straight track allows the car to slow down and brake, producing a controlled stop at the bottom, that keeps passengers from getting injured.

5 **Which graph <u>best</u> shows the motion of a car in a free-fall ride as the car drops?**

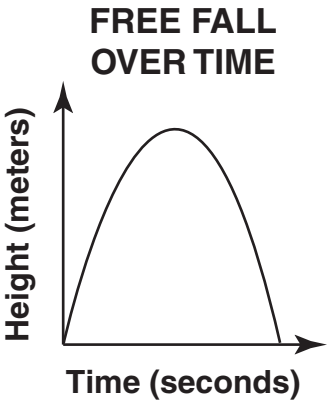
○ **A**

○ **B**



○ **C**

○ **D**



6 **The seats in a car of a free-fall ride are replaced with heavier seats.**

This change requires

- ○ **A** more force to lift the car
- ○ **B** less time to stop the car
- ○ **C** a lower rate of speed
- ○ **D** a higher rate of speed

7 **Two different-shaped objects were dropped from the same height. Data from the investigation was recorded, as shown below.**

Object Shape	Mass (grams)	Height Dropped (meters)	Average Time to Fall (seconds)
Round	100	10	10
Rectangular	115	10	12.5

Explain why the average times to fall were different for the two objects. In your explanation, be sure to include

- **the errors in this investigation**
- **how these errors affected the outcome**
- **how the investigation should be improved to obtain valid data**

Write your answer in the space provided.

8 **Mixing sugar, water, and lemon juice makes lemonade.**

Material	Characteristic Before Mixing	Characteristic After Mixing
Sugar	White crystal	Not visible
Water	Clear liquid	Slightly cloudy liquid
Lemon juice	Cloudy liquid, not very sweet	Cloudy liquid, sweet

Which of the following statements best describes the properties of the materials after mixing the lemonade?

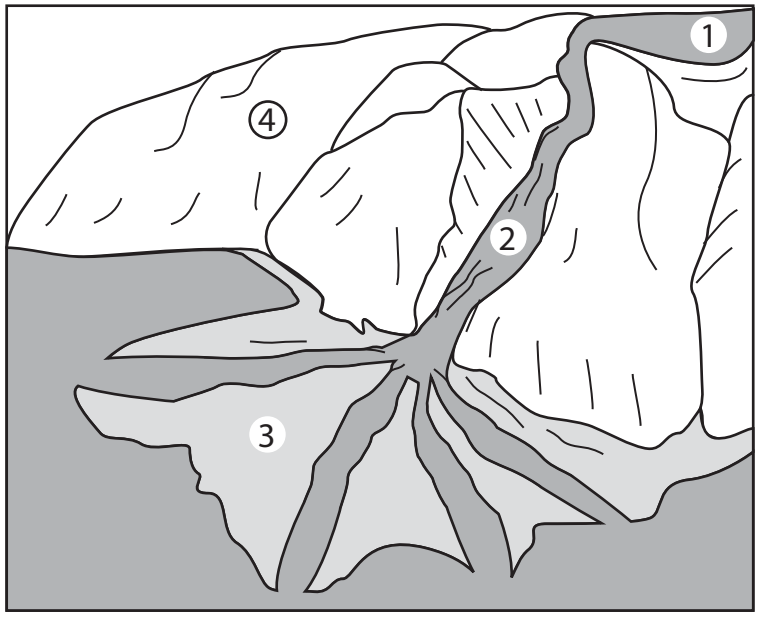
- ○ **A** The materials develop all new properties.
- ○ **B** The materials kept all of their original properties.
- ○ **C** The materials kept many of their physical properties.
- ○ **D** The materials changed most of their physical properties.

9 **A student boils 100 grams of water to form water vapor (gas).**

What method should the student use to determine that the mass of the water vapor is equal to 100 grams?

- ○ **A** measuring the amount of water vapor (gas) in the air
- ○ **B** collecting the water vapor (gas) and cooling it back to a liquid
- ○ **C** weighing the beaker before and after the water is boiled
- ○ **D** comparing the temperature of the boiling water to the temperature of the water vapor (gas)

10 **Erosion, transportation, and deposition change the surface of Earth.**



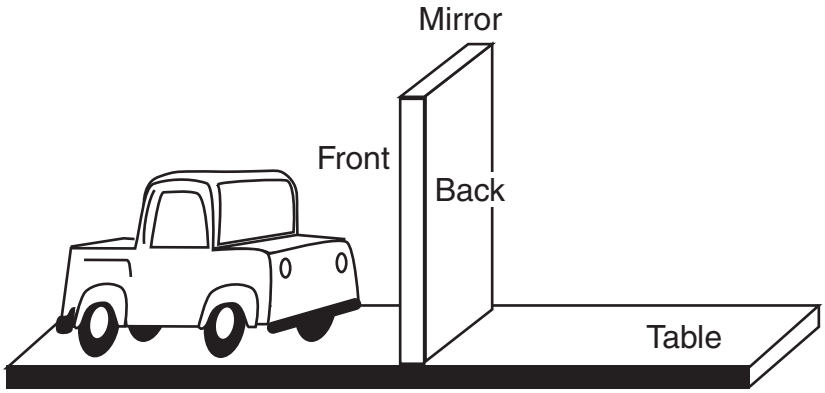
Which number in the diagram represents a landform made by the deposition of eroded sediment?

- **A** 1
- **B** 2
- **C** 3
- **D** 4

Directions

Use the information below to answer Numbers 11 through 13.

INVESTIGATING A PLANE MIRROR



Several students placed a toy truck on a table in front of a plane mirror and viewed the image of the truck in the mirror. Next, the students moved the toy truck to different positions and observed the reflected images of the truck from each position.

11 **The students placed the toy truck 20 centimeters in front of the mirror.**

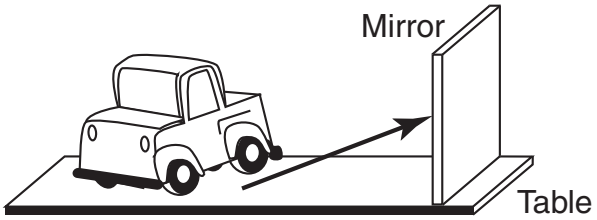
The image of the truck will appear to be

- ○ **A** 0 centimeters from the mirror
- ○ **B** 10 centimeters in front of the mirror
- ○ **C** 20 centimeters behind the mirror
- ○ **D** 40 centimeters behind the mirror

12 **How does the size of the image of the toy truck compare to the size of the actual toy truck?**

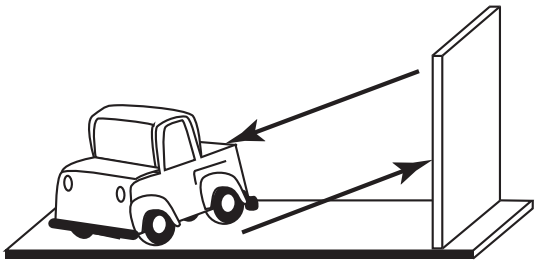
- ○ **A** the image is larger than the actual truck
- ○ **B** the image is smaller than the actual truck
- ○ **C** the image is the same size as the actual truck
- ○ **D** the image size depends on the light behind the toy truck

13 **The diagram below shows the path of a light ray from the toy truck to the mirror.**

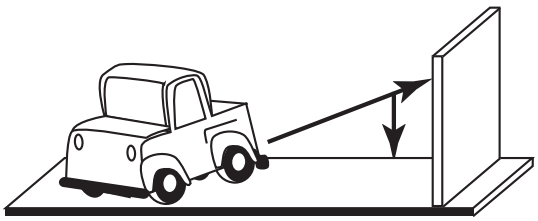


Which diagram best shows the path of the light ray after it is reflected from the mirror?

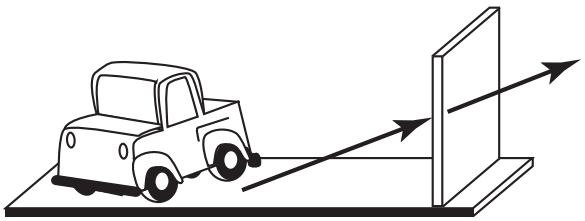
○ **A**



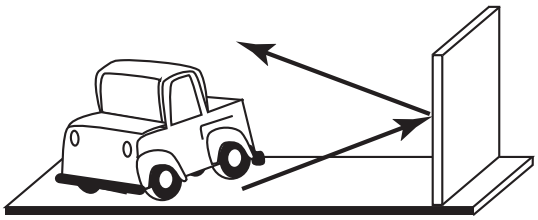
○ **B**



○ **C**



○ **D**



14 **In 1933, a hurricane came ashore at Ocean City, Maryland.**

A hurricane negatively affects a coastline by

- ○ **A** causing erosion
- ○ **B** causing earthquakes
- ○ **C** increasing food production
- ○ **D** increasing the growth of grasses

15 **How do coal and the sun compare as sources of energy?**

- ○ **A** Coal is renewable, and the sun is renewable.
- ○ **B** Coal is renewable, and the sun is nonrenewable.
- ○ **C** Coal is nonrenewable, and the sun is renewable.
- ○ **D** Coal is nonrenewable, and the sun is nonrenewable.

16 **Trees are a renewable natural resource.**

Which of these industries has the least need for trees?

- ○ **A** automobile manufacturing
- ○ **B** home building
- ○ **C** landscaping
- ○ **D** newspaper

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Session **2**

Directions

Use the information below to answer Numbers 17 through 19.

The drawing below shows a field habitat.

17 **Which of these organisms is a producer in the field habitat?**

- **A** bird
- **B** butterfly
- **C** grass
- **D** mouse

18 **What is the main source of energy in the field habitat?**

- **A** the sun
- **B** the plants
- **C** the butterfly
- **D** the soil

19 **Which of these changes would be <u>most</u> harmful to the organisms in the field habitat?**

- **A** more birds flying to the field habitat
- **B** increase of rainfall in the field habitat
- **C** students walking through the field habitat
- **D** construction of a building near the field habitat

20 **The motion of Earth is responsible for several celestial events.**

Which of the following events is caused by Earth revolving around the sun?

- ○ **A** the days in a year
- ○ **B** the hours in a day
- ○ **C** the changes in the atmosphere of Earth
- ○ **D** the position of the constellations in space

21 **Scientists estimate that Maryland contains more than 850 million tons of coal.**

Coal is <u>most</u> commonly used to produce

- ○ **A** electricity
- ○ **B** medicine
- ○ **C** metals
- ○ **D** water

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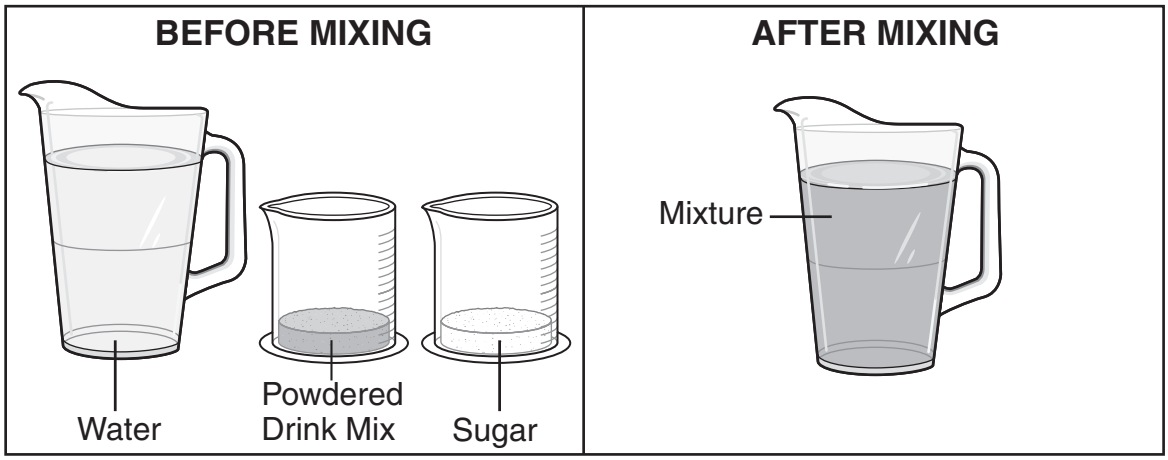
22 **A student mixes water, a powdered drink mix, and sugar to make a flavored drink.**



Explain what happens when the materials are combined to make a mixture. In your explanation, be sure to include

- **the properties before they are mixed**
- **how the properties were affected**

Write your answer in the spaces provided.

Properties Before Mixing

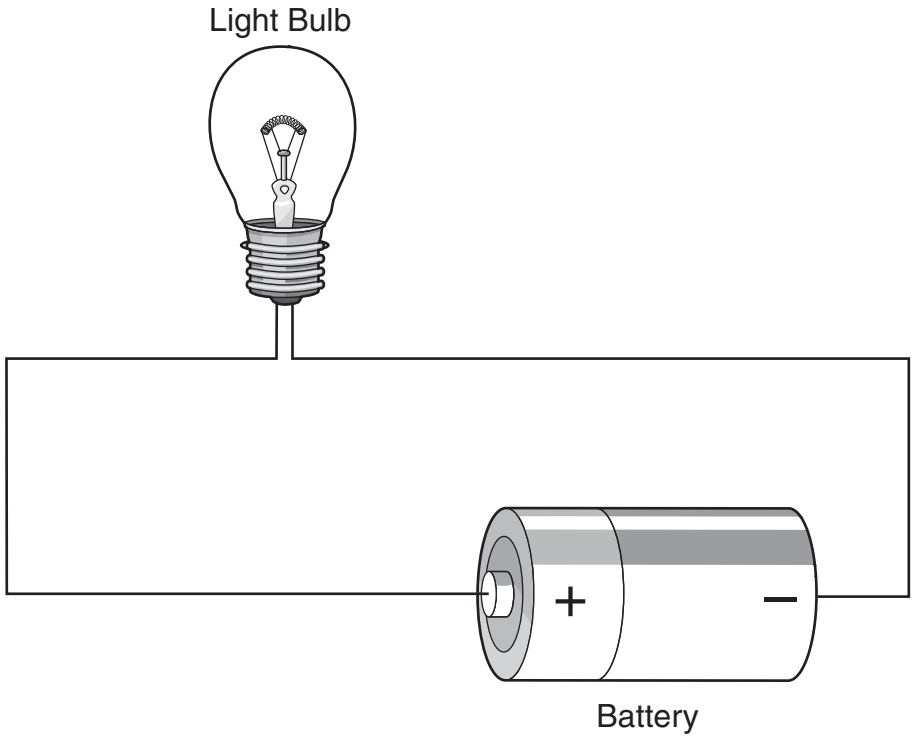
Properties After Mixing

23 **In 2004, Maryland recycled more than 35% of all of the waste the state produced.**

Which of these benefits does recycling provide to Maryland?

- ○ **A** fewer wild animals
- ○ **B** decreased farm crops
- ○ **C** less trash sent to landfills
- ○ **D** decreased use of electricity

24 **The diagram below shows a circuit made of a light bulb, a battery, and a wire.**



Which statement <u>best</u> describes this circuit?

- ○ **A** The circuit is closed because the battery is connected to two wires.
- ○ **B** The circuit is closed because wires connect the light bulb to the battery.
- ○ **C** The circuit is open because a wire is not correctly connected to the light bulb.
- ○ **D** The circuit is open because there are not enough wires to connect all the parts.

Directions

Use the information below to answer Numbers 25 through 27.

The sun appears to rise in the east and set in the west each day. During the day, the sun is so bright that other objects in space are rarely visible. At night, other objects in space, such as planets and stars, are often visible.

The data table below contains information about the planets in our solar system.

PLANETS IN THE SOLAR SYSTEM

Planet	Distance from the Sun (millions of kilometers)	Time for Revolution (Earth units)	Diameter at Equator (kilometers)	Time for Rotation (Earth units)
Mercury	58	88 days	4,878	59 days
Venus	108	225 days	12,104	243 days
Earth	150	365 days	12,756	24 hours
Mars	228	687 days	6,794	25 hours
Jupiter	778	12 years	142,984	10 hours
Saturn	1,433	29 years	120,536	11 hours
Uranus	2,871	84 years	51,118	17 hours
Neptune	4,497	165 years	49,500	17 hours

25 **Which of these changes on Earth would be likely if Earth were farther from the sun?**

- ○ **A** lower temperatures
- ○ **B** higher temperatures
- ○ **C** more hours in the day
- ○ **D** fewer days in the year

26 **Which of these actions is responsible for the sun appearing to rise and set?**

- ○ **A** Earth rotating on its axis
- ○ **B** the sun rotating on its axis
- ○ **C** Earth revolving around the sun
- ○ **D** the sun revolving around Earth

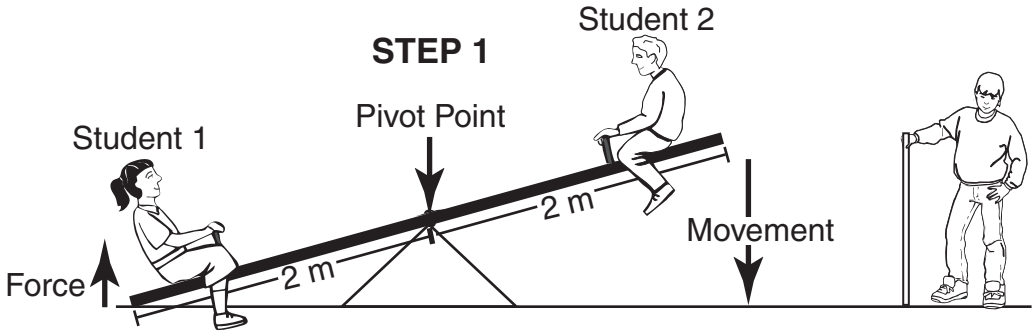
27 **Why is one year on Earth 365 days and one year on Mercury 88 days?**

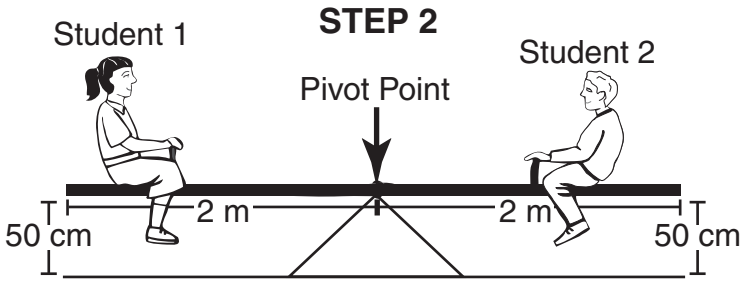
- ○ **A** Earth is larger than Mercury.
- ○ **B** Earth is smaller than Mercury.
- ○ **C** Earth is closer than Mercury to the sun.
- ○ **D** Earth is farther than Mercury from the sun.

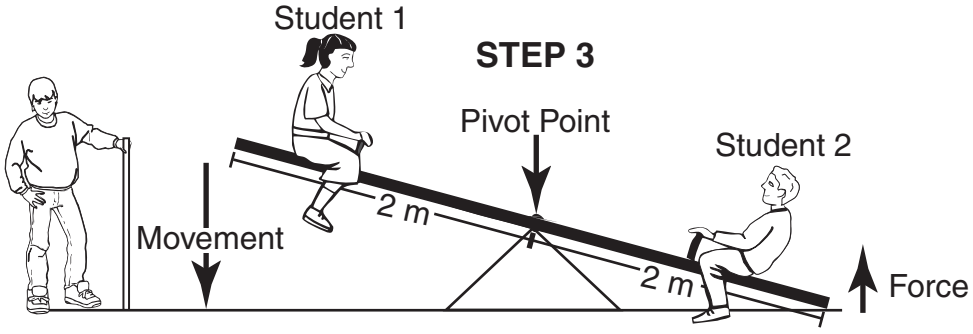
Directions

Use the information and pictures below to answer Numbers 28 through 30.

Two students with different masses investigated how their positions on a seesaw affected the movement of the seesaw. The students changed their horizontal positions on the seesaw and measured the highest point at the opposite end.







28 **How might the students best show periodic motion using the seesaw?**

- ○ **A** by switching ends of the seesaw every 10 seconds
- ○ **B** by balancing the ends of the seesaw for 10 seconds
- ○ **C** by taking turns pushing off the ground every 10 seconds
- ○ **D** by moving from the end to the center of the seesaw every 10 seconds

29 **What is the primary force that Student 1 works against in order to lower Student 2?**

- ○ **A** friction
- ○ **B** gravity
- ○ **C** magnetism
- ○ **D** pressure

30 **How does friction affect the downward movement of Student 2 from Step 1 to Step 3?**

- ○ **A** Friction slows the movement.
- ○ **B** Friction increases the downward force.
- ○ **C** Friction changes the direction of gravity.
- ○ **D** Friction increases the mass of the student.

31 **A female dog is having puppies. She has black fur, brown eyes, and a curly tail. She can sit, bark, and roll over on command.**

Which set of traits can the female dog's puppies inherit?

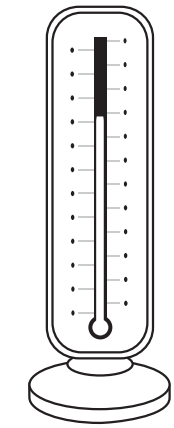
- ○ **A** brown eyes, black fur
- ○ **B** fur, roll over on command
- ○ **C** brown eyes, sit on command
- ○ **D** bark on command, curly tail

32 **A container is filled with 250 milliliters of water. The total mass of the container and the water is 300 grams.**

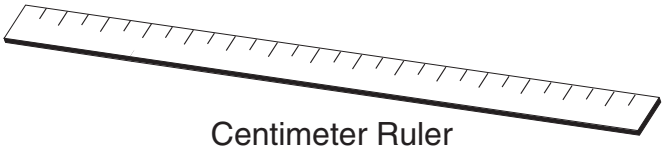
What is the total mass of the container and the water after being in a freezer for 2 hours?

- ○ **A** 50 grams
- ○ **B** 250 grams
- ○ **C** 300 grams
- ○ **D** 550 grams

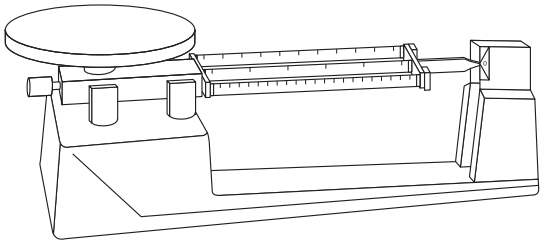
33 **A student is measuring the mass of a container of water.**



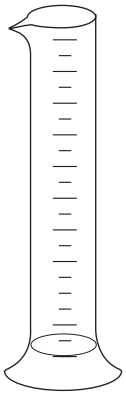
Thermometer



Centimeter Ruler



Balance



Graduated Cylinder

Which of these tools should be used to measure the mass of the container of water?

- **A** a balance
- **B** a thermometer
- **C** a centimeter ruler
- **D** a graduated cylinder

34 **The data table below shows the physical properties of four materials.**

PROPERTIES OF MATERIALS

Materials	Hard	Flexible	Conducts Electricity	Attracted by Magnets
Copper	No	Yes	Yes	No
Glass	Yes	No	No	No
Iron	Yes	No	Yes	Yes
Wood	Yes	No	No	No

How are glass and copper similar?

- ○ **A** Neither is hard.
- ○ **B** Both are flexible.
- ○ **C** Both conduct electricity.
- ○ **D** Neither is attracted by magnets.

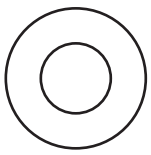
Session **3**

35 **Aluminum and copper are composed of different types of matter.**

Which statement best describes matter?

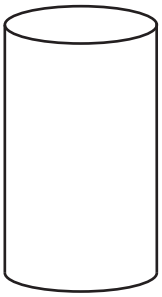
- **A** Matter has mass.
- **B** Matter has mass and volume.
- **C** Matter must change into different forms.
- **D** Matter must be contained in a certain volume.

36 **Different materials are attracted by magnets.**

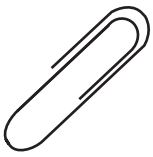


Aluminum Washer

Iron Nail



Copper Cylinder



Steel Paper Clip

Which items are attracted by a magnet?

- **A** copper cylinder and iron nail
- **B** steel paper clip and iron nail
- **C** steel paper clip and copper cylinder
- **D** aluminum washer and steel paper clip

37 **Fossils of clam shells were found in the Appalachian Mountains.**

Which of these statements best explains why the clam shells were found in the Appalachian Mountains?

- ○ **A** The mountain range was once under water.
- ○ **B** Birds flying overhead dropped the clam shells.
- ○ **C** Animals released the clam shells in their waste.
- ○ **D** The clams lived on land before moving to water.

Directions

Use the information below to answer Numbers 38 through 40.

Students are learning about the natural resources in Maryland. One group of students researches information about renewable natural resources in the state. The other group researches information about nonrenewable natural resources in the state. The resources the students investigate include plants, animals, soil, minerals, water, coal, and oil.

38 **Aluminum is a nonrenewable natural resource.**

Which of these methods of aluminum disposal is best for the environment?

- ○ **A** burning it
- ○ **B** recycling it
- ○ **C** burying it in landfills
- ○ **D** crushing it before throwing it away

39 **Which of the following human activities negatively affects a natural resource?**

- **A** fishing in a lake
- **B** using water to produce electricity
- **C** planting native plants along a lakeshore
- **D** directing runoff from cropland into a lake

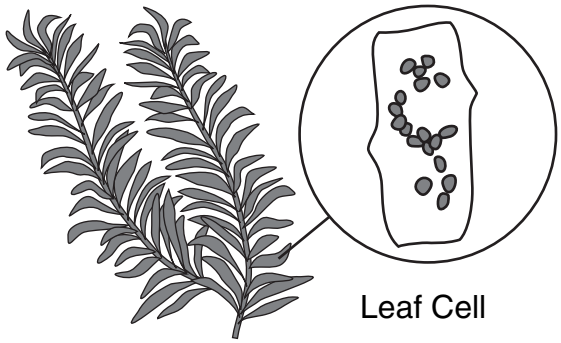
40 **Which nonrenewable natural resource heats homes?**

- **A** sunlight
- **B** aluminum
- **C** natural gas
- **D** ocean waves

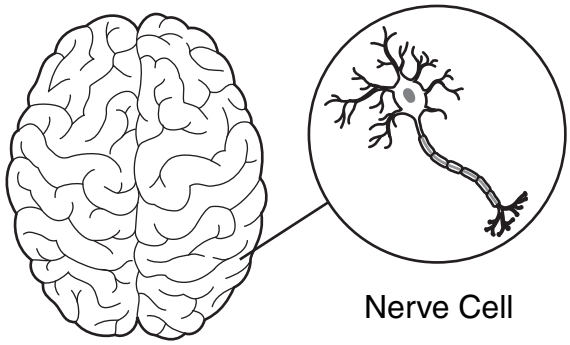
Directions

Use the information below to answer Numbers 41 through 43.

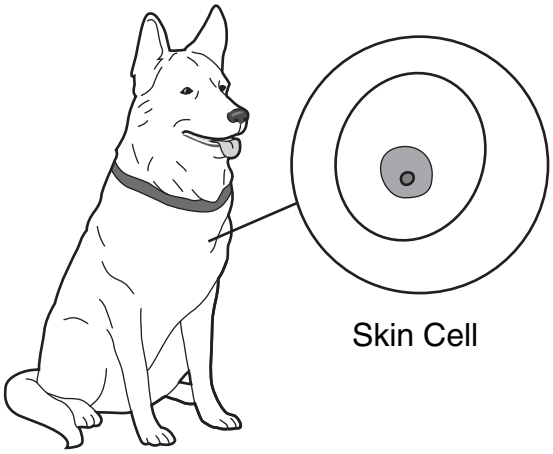
Most organisms are made of many different types of cells. Each type of cell has a special role within the organism.



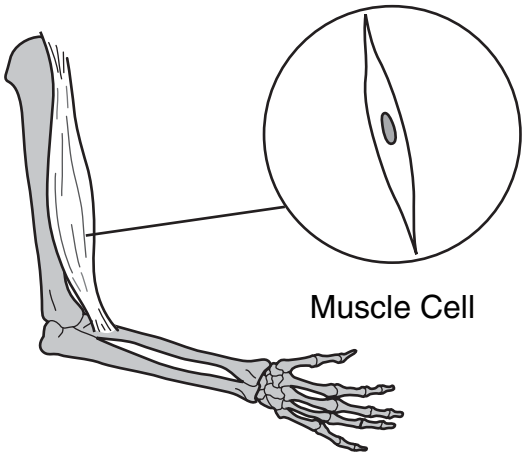
Leaf Cell



Nerve Cell



Skin Cell



Muscle Cell

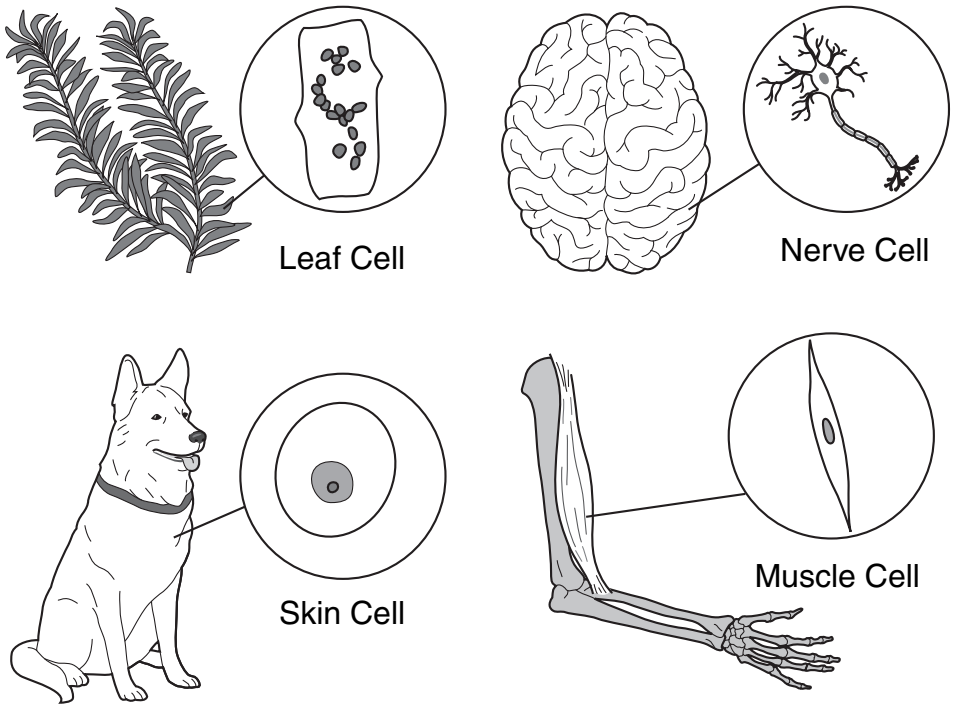
41 **Which of these organisms would most likely contain cells shaped like a rectangle?**

- ○ **A** a cat
- ○ **B** a clam
- ○ **C** a fish
- ○ **D** a tree

42 **Which of these cells uses sunlight to produce food?**

- ○ **A** leaf cell
- ○ **B** skin cell
- ○ **C** nerve cell
- ○ **D** muscle cell

43 **Multicellular organisms are made of groups of cells working together to do one job. These are called specialized cells. The diagrams show four types of specialized cells. Not all multicellular organisms need the same specialized cells.**



Explain why multicellular organisms only need certain specialized cells. In your explanation, be sure to include

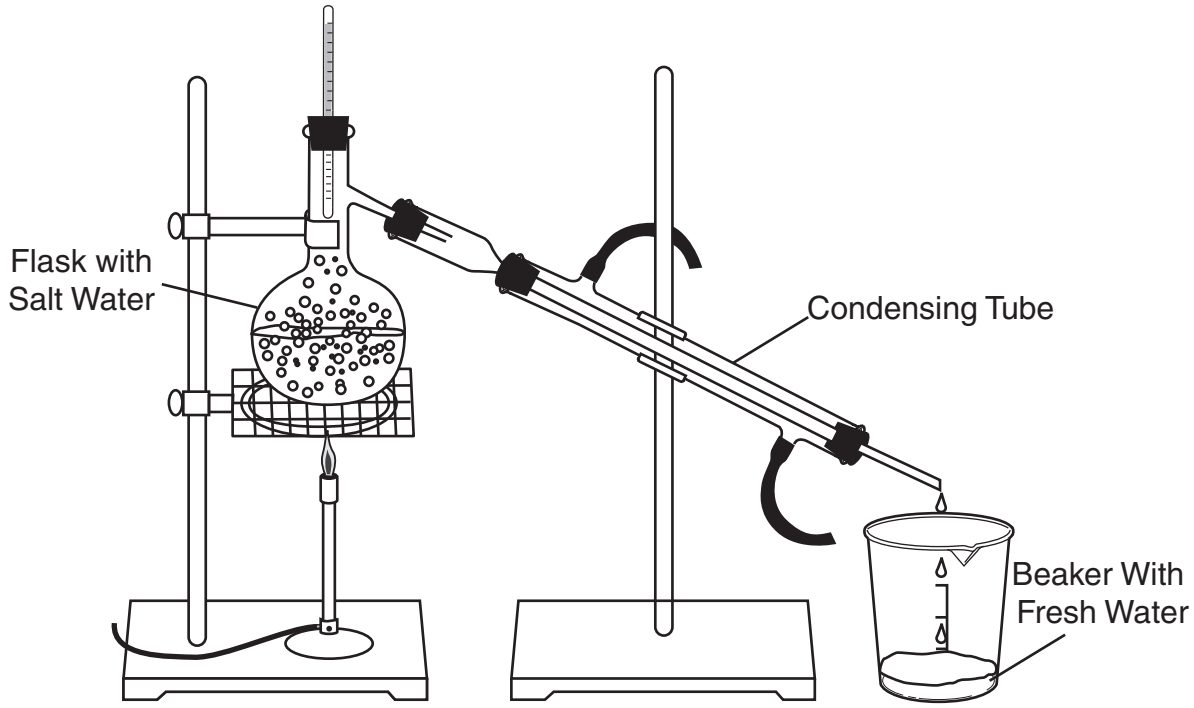
- **a type of specialized cell <u>not</u> found in a plant**
- **why this specialized cell is <u>not</u> needed by a plant**

Write your answer in the space provided.

Directions

Use the information below to answer Numbers 44 through 46.

Seawater contains a number of different salts. The water can be separated by a process called distillation. A simple distillation setup is shown below.



The water in the flask evaporates. Water vapor (gas) rises, leaving the salt in the flask. The water vapor is cooled in the condensing tube and drips into the beaker.

44 **During the process shown in the diagram, water vapor (gas) changes into liquid water by**

- **A** cooling
- **B** evaporating
- **C** freezing
- **D** warming

45 **Why does salt remain in the flask?**

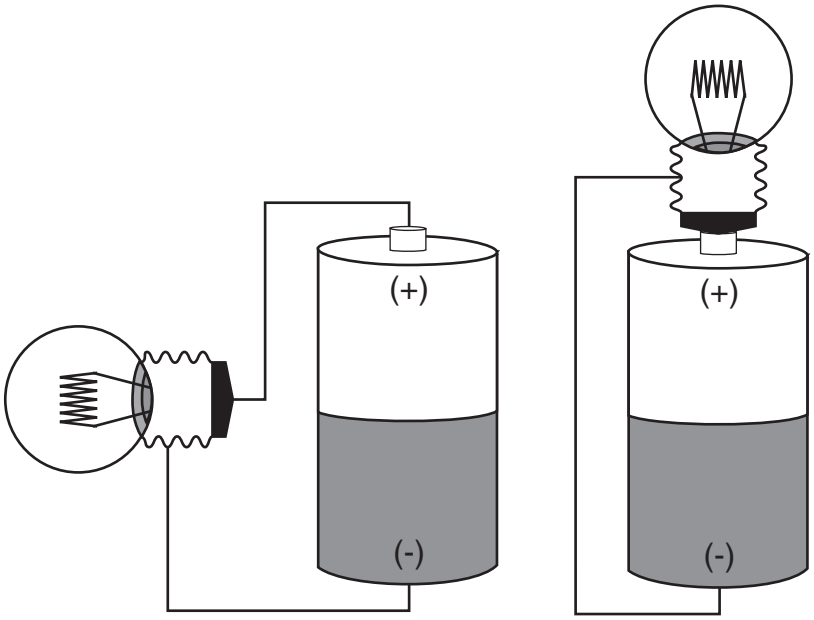
- **A** Salt is attracted to heat.
- **B** Salt does not evaporate.
- **C** Salt is too heavy to become a vapor (gas).
- **D** Salt becomes water after it is heated.

46 **Salt water and fresh water are both found on the surface of Earth.**

What feature of water is <u>most</u> important to life on Earth?

- **A** the ability to dissolve salt
- **B** the ability to change shape
- **C** the ability to exist in the atmosphere
- **D** the ability to exist as a solid, liquid, or gas

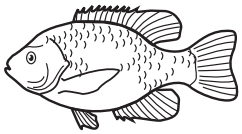
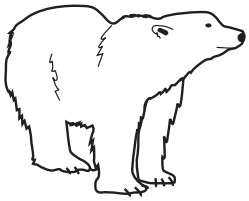
Use the diagram below to answer Number 47.



47 **Which statement <u>best</u> describes the circuits in the diagram?**

- ○ **A** Only the light bulb in Circuit 1 is lit.
- ○ **B** Only the light bulb in Circuit 2 is lit.
- ○ **C** Both light bulbs are lit.
- ○ **D** Neither light bulb is lit.

48 **Each of the animals below belongs to a different group.**

Group 1	Group 2	Group 3	Group 4
 Great Blue Heron	 Sunfish	 Leopard Frog	 Polar Bear

Which physical feature classifies all four animals into the same group?

- ○ **A** the type of skin
- ○ **B** the number of legs
- ○ **C** the size of the eyes
- ○ **D** the location of the mouth

49 **Eye color is a physical trait.**

Which statement best explains why a child has a specific eye color?

- ○ **A** Eye color is a learned trait.
- ○ **B** Eye color is an inherited trait.
- ○ **C** Eye color is a trait that changes over time.
- ○ **D** Eye color is a trait that happens by chance.

50 **Coal and trees are resources found in Maryland.**

Both resources are used for

- ○ **A** making paper
- ○ **B** making pencils
- ○ **C** building houses
- ○ **D** producing heat

Session 4

51 **The piping plover is a bird that builds its nest on sand dunes along the Atlantic Ocean.**

Which of these actions most likely damages the nests of the piping plover?

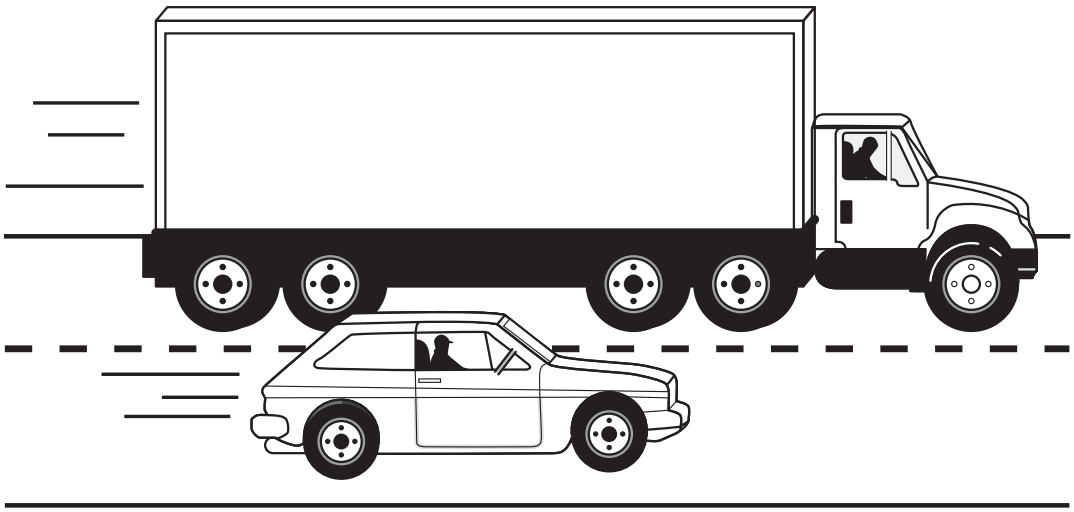
- ○ **A** people fishing from a boat
- ○ **B** children playing in the ocean waves
- ○ **C** children digging holes along the sand dunes
- ○ **D** people walking on a sidewalk along the sand dunes

52 **Plants and animals need food for growth.**

What happens to most of the food that plants produce?

- ○ **A** Food is released as gas.
- ○ **B** Food is converted to water.
- ○ **C** Food is stored for future use.
- ○ **D** Food is used to absorb sunlight.

53 **A car and a truck move on a road in the same direction at the same speed. Both vehicles slow down with the same stopping force.**



Which statement best explains why the truck needs more distance to stop?

- ○ **A** The truck is longer.
- ○ **B** The truck has more mass.
- ○ **C** The truck has larger wheels.
- ○ **D** The truck has a larger engine.

Directions

Use the passage below to answer Numbers 54 through 56.

The Greenhouse Effect

The greenhouse effect is the rise in temperature that the Earth experiences because certain gases in the atmosphere (water vapor, carbon dioxide, nitrous oxide, and methane, for example) trap energy from the sun. Without these gases, heat would escape back into space and Earth's average temperature would be about 60°F colder. Because of how they warm our world, these gases are referred to as greenhouse gases.

Most greenhouses look like a small glass house. Greenhouses are used to grow plants, especially in the winter. Greenhouses work by trapping heat from the sun. The glass panels of the greenhouse let in light but keep heat from escaping. This causes the greenhouse to heat up, much like the inside of a car parked in sunlight, and keeps the plants warm enough to live in the winter.

Greenhouse gases in the atmosphere behave much like the glass panes in a greenhouse. Sunlight enters the Earth's atmosphere, passing through the blanket of greenhouse gases. As it reaches the Earth's surface, land, water, and biosphere absorb the sunlight's energy. Once absorbed, this energy is sent back into the atmosphere. Some of the energy passes back into space, but much of it remains trapped in the atmosphere by the greenhouse gases, causing our world to heat up.

Once, all climate changes occurred naturally. However, during the Industrial Revolution, we began altering our climate and environment through agricultural and industrial practices. The Industrial Revolution was a time when people began using machines to make life easier. It started more than 200 years ago and changed the way humans live. Before the Industrial Revolution, human activity released very few gases into the atmosphere, but now through population growth, fossil fuel burning, and deforestation, we are affecting the mixture of gases in the atmosphere.

Since the Industrial Revolution, the need for energy to run machines has steadily increased. Some energy, like the energy you need to do your homework, comes from the food you eat. But other energy, like the energy that makes cars run and much of the energy used to light and heat our homes, comes from fuels like coal and oil—fossil fuels. Burning these fuels releases greenhouse gases.

54 **What is the main energy source that causes changes in the atmosphere of Earth?**

- ○ **A** the sun
- ○ **B** the moon
- ○ **C** fossil fuels
- ○ **D** greenhouse gases

55 **Greenhouse gases affect the water cycle by**

- ○ **A** increasing evaporation
- ○ **B** increasing condensation
- ○ **C** decreasing precipitation
- ○ **D** decreasing deposition

56 **How would Earth most likely change if the amount of greenhouse gases continued to increase?**

- ○ **A** Glacier size would increase.
- ○ **B** Air pollution would decrease.
- ○ **C** Ocean levels would decrease.
- ○ **D** Global temperatures would increase.

57 **A student is measuring the speed at which a ball rolls down a ramp.**

Which unit of measurement is the student most likely using to describe the speed of the ball?

- ○ **A** meter per liter
- ○ **B** seconds per gram
- ○ **C** milligrams per liter
- ○ **D** centimeters per second

58 **A student is investigating which type of soil is best for growing tomato plants from seeds. The student plants four tomato seeds in each of three different containers of soil.**

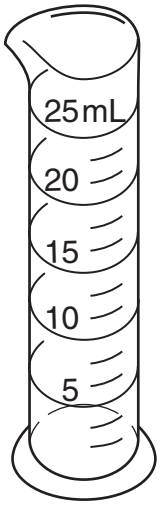
Which step of the procedure would help the student get the most reliable results?

- ○ **A** Place one container in a dark room.
- ○ **B** Use different types of tomato seeds.
- ○ **C** Change only the soil type in each container.
- ○ **D** Water each container with a different amount of water.

59 **A student needs to measure the volume of some pond water.**

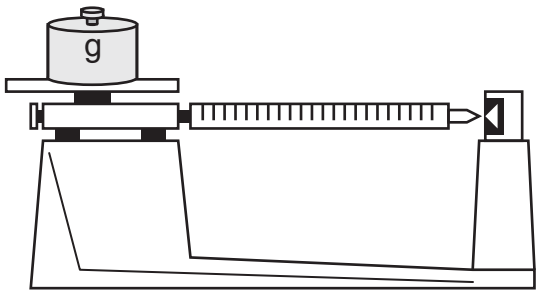
Which of these tools will <u>best</u> measure the volume of pond water?

○ **A**



Graduated Cylinder

○ **B**

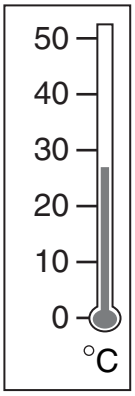


Balance

○ **C**

Metric Ruler

○ **D**



Thermometer

60 **The Little Dipper is a group of stars. During the night, the Little Dipper appears to change positions in the sky.**

Which of these statements best explains why the Little Dipper appears to change positions in the night sky?

- ○ **A** Earth rotates on its axis.
- ○ **B** Earth revolves around the stars.
- ○ **C** The Little Dipper moves around the sun.
- ○ **D** The stars in the Little Dipper move in the sky.

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Directions

Use the information below to answer Numbers 61 through 63.

Science students observed the physical properties of different materials. They recorded their observations in the data table below.

Material	State of Matter	Observations
Salt	Solid	White grains
Sand	Solid	Brown and white grains
Vinegar	Liquid	Clear liquid
Baking Soda	Solid	White, powdery
Glass marbles	Solid	Many colors; hard, round
Steel marbles	Solid	Shiny metal, round, hard

The students then combined baking soda with some of the materials. Their observations are in the data table below.

Material	State of Matter	Observations When Materials Were Mixed
Baking soda + salt	Solid	White, powdery
Baking soda + sand	Solid	White, powdery; brown grains
Baking soda + vinegar	Liquid and gas	Bubbles and foam; clear liquid

61 **Students measured the mass of a 100-milliliter beaker filled with sand and the mass of a 100-milliliter beaker filled with glass marbles. The beaker of sand had more mass than the beaker of glass marbles.**

Why did the beaker of sand have more mass than the beaker of glass marbles?

- ○ **A** The sand is harder than the glass marbles.
- ○ **B** The sand has more matter than the glass marbles.
- ○ **C** The glass marbles are smooth, and the sand is rough.
- ○ **D** The glass marbles are round, and the sand has different shapes.

62 **What happened to the properties of the baking soda and the salt after the two materials were mixed together?**

- ○ **A** The properties of the baking soda and salt changed.
- ○ **B** The properties of the baking soda and salt did not change.
- ○ **C** The properties of the baking soda changed, but the properties of the salt did not change.
- ○ **D** The properties of the baking soda did not change, but the properties of salt changed.

63 **The students were given a mixture of salt, sand, glass marbles, and steel marbles.**

Which material in the mixture would be attracted by a magnet?

- ○ **A** salt
- ○ **B** sand
- ○ **C** glass marbles
- ○ **D** steel marbles

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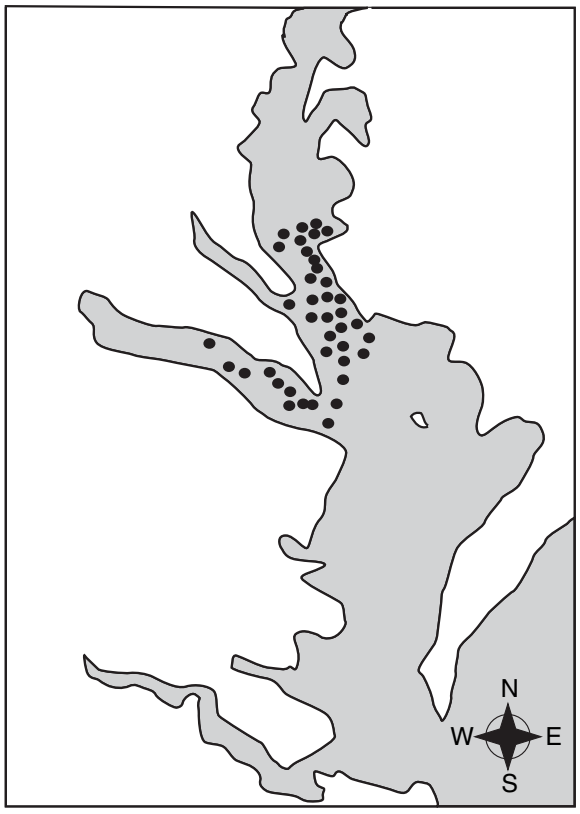
Directions

Use the information below to answer Numbers 64 through 66.

Large populations of sea nettles have been observed during the summer in parts of the Chesapeake Bay. The Chesapeake Bay is a mixture of salt water and fresh water. During the summer, the bay has a moderately high salt content. The amount of salt in the water, the salinity, depends on the amount of fresh water that flows into the bay. Additionally, some studies suggest that human activities have caused an increase in the sea nettle population.

SEA NETTLE SIGHTINGS IN THE CHESAPEAKE BAY

Sea Nettle



KEY
● = Sea nettle sightings

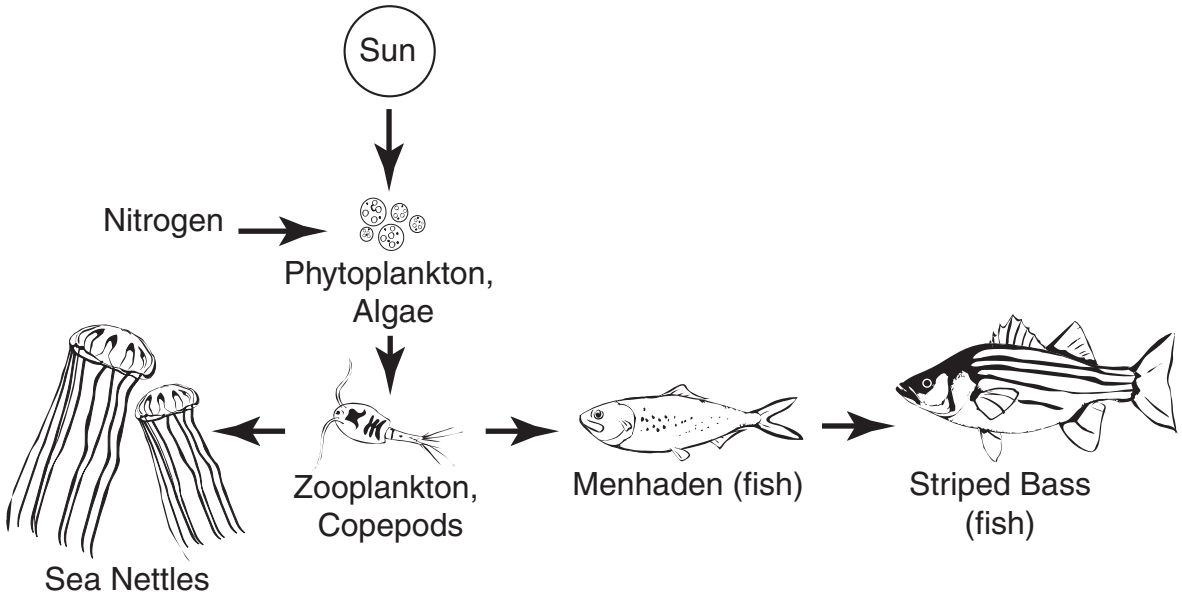
64 **The salinity level of the bay is changed when pollutants enter the bay. Salinity is also affected by extreme temperatures, drought conditions, and floods.**

Which of these events would have the most negative effect on the sea nettle population in the bay?

- ○ **A** fossil fuel burning cars drive across the bay on a bridge
- ○ **B** farmland fertilizers enter a river that flows into a nearby bay
- ○ **C** a thunderstorm dumps rain along a shoreline of a nearby bay
- ○ **D** overflow from a waste water treatment plant empties directly into the bay

65 **Sea nettles need small amounts of nutrients to survive and reproduce. Sea nettle populations increase quickly when excess nitrogen pollutes the water in which the sea nettles live. A sea nettle reproduces by laying thousands of eggs.**

SEA NETTLE FOOD WEB



How would excess nitrogen <u>most likely</u> affect the other organisms in this food web?

- ○ **A** The striped bass (fish) population would increase immediately.
- ○ **B** The menhaden (fish) population would decrease slowly.
- ○ **C** The copepod population would increase quickly.
- ○ **D** The algae population would decrease slowly.

66 **Scientists have recorded the temperature and salinity data of the Chesapeake Bay every day for many years.**

Using these data, scientists will most likely be able to predict

- ○ **A** the depth of the water in the bay
- ○ **B** the exact number of sea nettles in the bay
- ○ **C** the number of fish in the bay that eat sea nettles
- ○ **D** the weather patterns in the bay that affect sea nettles